AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough; and 2. added matter is shown by underlining.

1. (Currently Amended) A device for determining a movement of an eye [[(1)]], ~~which comprises~~ comprising an illumination unit ~~(16, 29, 42, 48, 56)~~, which generates optical radiation during operation and emits it as an illumination ray bundle ~~(13, 13', 13")~~ for illumination of at least one region on the cornea [[(7)]] of the eye [[(1)]],

a distance-determining unit [[(17)]], which senses, in a temporally resolved manner, the illumination ray bundle ~~(13, 13', 13'')~~ returned by the cornea [[(7)]] as a detection ray bundle ~~(14, 14', 14")~~ and generates a distance signal using the received optical radiation of the detection ray bundle ~~(14, 14', 14")~~, said signal corresponding to a distance of the cornea [[(7)]] from a reference plane ~~(12, 12', 12")~~, which is defined relative to the distance-determining unit [[(17)]], and

an evaluating unit [[(11)]] which, using said distance signal, generates a position or movement signal corresponding to a position or movement of the eye [[(1)]].

2. (Currently Amended) The device as claimed in Claim 1 [[or 2]], wherein the illumination unit ~~(16, 29, 42, 48, 56)~~ is provided such that a diameter of the illumination ray bundle ~~(13, 13', 13")~~ on the cornea [[(7)]] of the eye [[(1)]] arranged in front of the device is between 2 μm and 20 μm during operation.

3. (Currently Amended) The device as claimed in ~~any one of the preceding Claims~~ <u>Claim 1</u>, wherein the distance-determining unit [[(17)]] comprises an interferometer portion [[(18)]] which, together with the cornea [[(7)]], forms an interferometer during operation.

4. (Currently Amended) The device as claimed in Claim 3, wherein the illumination unit [[(16)]] is provided to emit optical radiation having a predetermined temporal coherence length, the interferometer portion [[(18)]] comprises at least one beam splitter [[(21)]] arranged in the path of the illumination ray bundle ~~(13, 13', 13")~~ so as to form a reference ray bundle [[(22)]] from the optical radiation of the illumination unit [[(16)]], at least one optical functional element [[(21)]] for superimposing the detection ray bundle ~~(14, 14', 14'')~~ onto the reference ray bundle [[(22)]], and a unit ~~(25, 26)~~ for varying the optical path length of the reference ray bundle [[(22)]] between the beam splitter [[(21)]] and the optical functional element [[(21)]] or the optical path length of the path of the illumination ray bundle ~~(13, 13', 13")~~ after the beam splitter [[(21)]] and/or between the spot ~~(15, 15', 15'')~~ illuminated by the illumination ray bundle ~~(13, 13', 13")~~ on the cornea [[(7)]] and the optical functional element [[(21)]], and the distance-determining unit [[(17)]] comprises a detection unit ~~(19, 20)~~, which suitably senses the intensity

of the superimposed reference and detection ray bundles ~~(22; 14)~~ and transforms them into a distance signal.

5. (Currently Amended) The device as claimed in Claim 4, wherein the unit ~~(25, 26)~~ for varying the optical path length comprises a reflector [[(25)]] which is movable back and forth in a substantially linear manner.

6. (Currently Amended) The device as claimed in Claim 4, wherein the unit for varying the optical path length comprises a reflector arrangement, which is rotatable or pivotable about an axis, said reflector arrangement comprising a plurality of reflecting portions each ~~differently spaced apart~~ located a different distance from the axis.

7. (Currently Amended) The device as claimed in Claim 1 [[or 2]], ~~which comprises~~ further comprising illumination optics ~~(31, 58)~~ for focusing the illumination ray bundle ~~(13, 13', 13")~~ for at least one wavelength in a predetermined range of possible positions of the cornea [[(7)]] and wherein the distance-determining unit [[(17)]] in a detection beam path comprises detection optics ~~(31, 32; 31, 41; 31, 49; 49, 58)~~, a small-aperture stop [[(33)]] arranged following said detection optics and located in a stop plane, and a detection unit ~~(34, 35; 43, 45; 50, 51)~~ arranged following said aperture stop [[(33)]] for detecting the optical radiation behind the small-aperture stop [[(33)]], wherein the stop plane is conjugated with an object plane [[(39)]] associated with the wavelength, said object plane being located in a range of possible positions of the cornea [[(7)]].

8. (Currently Amended) The device as claimed in Claim 7, wherein the position of the illumination and/or detection optics ~~(31, 32; 31, 41; 31, 49; 49, 58)~~ and/or of the aperture stop [[(33)]] and/or the focal length of the illumination and/or detection optics ~~(31, 32; 31, 41; 31, 49; 49, 58)~~ and/or the position of the illuminated spot can be changed by means of a drive [[(38)]].

9. (Currently Amended) The device as claimed in Claim 7, wherein optical radiation of different wavelengths can be emitted by the illumination unit ~~(42, 48, 56)~~, and ray bundle forming optics [[(53)]] of the illumination unit [[(48)]], the illumination optics and/or the detection optics are dispersive ~~(31, 41; 49, 58)~~.

10. (Currently Amended) The device as claimed in ~~any one of Claims 7 to 9~~ Claim 7, wherein the illumination unit [[(42)]] is adapted for emitting optical radiation in at least two different spectral ranges.

11. (Currently Amended) The device as claimed in ~~any one of Claims 7 to 9~~ Claim 7, wherein the illumination unit ~~(48, 56)~~ comprises a source of radiation [[(52)]] for emitting optical radiation in a predetermined spectral range.

12. (Currently Amended) The device as claimed in ~~any one of Claims 7 to 11~~ Claim 7, wherein the detection unit ~~(50, 51) is provided~~ is positioned for spectrally and temporally resolved detection of the optical radiation behind the small-aperture stop [[(33)]].

13. (Currently Amended) The device as claimed in Claim 10, wherein the detection unit ~~(43, 45)~~ is adapted for detection of the optical radiation behind the small-aperture stop [[(33)]] in a manner timed with the change of the spectral ranges of the illumination ray bundles ~~(13, 13', 13'')~~.

14. (Currently Amended) The device as claimed in ~~any one of Claims 7 to 13~~ Claim 7, wherein the illumination optics [[(58)]] and the detection optics ~~(58, 49)~~ comprise a common objective [[(59)]].

15. (Currently Amended) The device as claimed in Claim 14, wherein the common objective [[(59)]] has a predetermined longitudinal chromatic aberration.

16. (Currently Amended) The device as claimed in ~~any one of the preceding Claims~~ Claim 1, comprising at least one illumination unit ~~(16, 29, 42, 48, 56)~~, which emits two illumination ray bundles ~~(13, 13', 13")~~ and which illuminates two different areas on the cornea [[(7)]] of the eye [[(1)]], and comprising at least one distance-determining unit [[(17)]], which receives, in a temporally resolved manner, detection ray bundles ~~(14, 14', 14'')~~ reflected by said two areas on the cornea [[(7)]] and generates distance signals corresponding to distances of the

cornea [[(7)]] from two reference planes ~~(12, 12', 12")~~, said reference planes ~~(12, 12', 12")~~ each being defined for one of the detection ray bundles ~~(14, 14', 14")~~ relative to the distance-determining unit [[(17)]] and the evaluating unit [[(11)]] evaluating the distance signals and generating position or movement signals which correspond to a position or movement of the eye [[(1)]] in two spatial directions.

17. (Currently Amended) The device as claimed in ~~any one of Claims 1 to 15~~ <u>Claim 1</u>, comprising at least one illumination unit ~~(16, 29, 42, 48, 56)~~, which emits three illumination ray bundles ~~(13, 13', 13")~~, which illuminate three different areas forming the corners of a triangle on the cornea [[(7)]] of the eye [[(1)]], and comprising at least one distance-determining unit [[(17)]], which receives, in a temporally resolved manner, detection ray bundles ~~(14, 14', 14'')~~ reflected by said three areas on the cornea [[(7)]] and generates distance signals corresponding to distances of the cornea [[(7)]] from three reference planes ~~(12, 12', 12")~~, said reference planes ~~(12, 12', 12")~~ each being defined for one of the detection ray bundles ~~(14, 14', 14")~~ relative to the distance-determining unit [[(17)]] and the evaluating unit [[(11)]] evaluating the distance signals and generating position or movement signals which correspond to a position or movement of the eye [[(1)]] in three spatial directions.

Claims 18-34 (Cancelled).

Please add new claims 35-52 as follows:

35. (New) A method of determining a movement of an eye comprising the steps of:

radiating optical radiation onto the cornea of the eye as an illumination ray bundle;

generating distance signals corresponding to the distance of the cornea from a predetermined reference plane in a temporally resolved manner, using the optical radiation returned by the cornea as detection ray bundles; and

generating position or movement signals corresponding to a position or movement of the eye from the distance signals.

36. (New) The method as claimed in Claim 34, wherein the illumination ray bundle has a diameter of between 2 µm and 20 µm at the cornea.

37. (New) The method as claimed in Claim 34, further comprising the steps of

coupling out a reference ray bundle from the illumination ray bundle;

superimposing the detection ray bundle on the reference ray bundle; and

generating the distance signal by detection of interferences of the superimposed ray bundles.

38. (New) The method as claimed in Claim 37, further comprising the steps of:

varying the optical path length for the reference ray bundle before superposition, the illumination ray bundle after splitting off of the reference ray bundle and/or the detection ray bundle before superposition;

detecting the intensity of the superimposed reference and detection ray bundles in a temporally resolved manner; and

generating a distance signal on the basis of the detected intensity.

39. (New) The method as claimed in Claim 38, further comprising the step of moving a reflector to vary the optical path length.

40. (New) The method as claimed in Claim 39, further comprising the step of rotating a plurality of reflecting surface portions about an axis to vary the optical path length, said surface portions having different radial spacings from the axis.

41. (New) The method as claimed in Claim 35, further comprising the steps of:

focusing the illumination ray bundle for at least one wavelength into a predetermined range of possible positions of the cornea;

focusing the detection ray bundle through detection optics into the region of a small-aperture stop located in a stop plane, said stop plane being conjugated with an object plane which is associated with the wavelength and which lies in a predetermined range of possible positions of the cornea; and

generating the distance signal by detection of the optical radiation passing through the small-aperture stop.

42. (New) The method as claimed in Claim 41, wherein the range of possible distances of the cornea from the reference plane is scanned by changing the distance between the object plane and the small-aperture stop.

43. (New) The method as claimed in Claim 41, wherein optical radiation of different wavelengths is used, and the illumination and/or detection ray bundle is guided through at least one strongly dispersive optical functional element.

44. (New) The method as claimed in Claim 41, wherein illumination ray bundles with optical radiation in at least two different spectral ranges are alternately used in a predetermined time sequence.

45. (New) The method as claimed in Claim 41, wherein the illumination ray bundle comprises optical radiation in a spectral range of 400 nm to 1700 nm.

46. (New) The method as claimed in Claim 43, wherein the intensity of the detection ray bundle behind the small-aperture stop is detected in a spectrally and temporally resolved manner.

47. (New) The method as claimed in Claim 44, wherein the intensity of the detection ray bundle behind the small-aperture stop is detected in a manner timed with the change of the spectral ranges of the illumination ray bundles.

48. (New) The method as claimed in Claim 35, wherein the illumination ray bundle is radiated onto an area of the cornea at an angle of incidence of less than ten degrees

49. (New) The method as claimed in Claim 35, wherein the illumination ray bundle is radiated onto an area of the cornea at an angle of incidence of less than five degrees.

50. (New) The method as claimed in Claim 35, further comprising the step of illuminating at least two different areas on the cornea by at least two different illumination ray bundles;

generating distance signals relating to the distances of the cornea from corresponding predetermined reference planes in a temporally resolved manner, using the optical radiation respectively returned by the cornea as detection ray bundles: and

generating position or movement signals relating to a position or movement of the eye in at least two spatial directions on the basis of said distance signals.

51. (New) The method as claimed in Claim 35, further comprising the steps of:

illuminating at least three different areas on the cornea forming corners of a triangle by at least three different illumination ray bundles;

generating distance signals relating to the distances of the cornea from corresponding, predetermined reference planes in a temporally resolved manner, using the optical radiation respectively returned by the cornea as detection ray bundles; and

generating position or movement signals relating to a position or movement of the eye in at least three spatial directions on the basis of said distance signals.

52. (New) The method as claimed in Claim 35, further comprising the steps of guiding illumination and detection radiation over the eye synchronously with a therapeutic beam.